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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,471	01/15/2004	Min-Chul Suh	1514.1039	4143

49455 7590 04/21/2006

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EXAMINER

GARRETT, DAWN L

ART UNIT

PAPER NUMBER

1774

DATE MAILED: 04/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/757,471

Applicant(s)

SUH, MIN-CHUL

Examiner

Dawn Garrett

Art Unit

1774

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 March 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
 - 2) ☐ Certified copies of the priority documents have been received in Application No. _____.
 - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 1-15-04;7-1-05.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

1. This Office action is responsive to the response to the election of species requirement and the amendment to the claims dated March 21, 2006. Claims 1-16 were amended and are pending. Applicant elected with traverse the species of an electron acceptor material that is an aromatic compound having a nitro group and the species of an electron donor material that is an aromatic compound having a hydrogen. The examiner maintains that the species are distinct and require a separate search. Applicant appears to argue that the species are not patentably distinct. If such is the case, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or *clearly admit* on the record that this was intended, and the election requirement will be withdrawn. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission *may be used in a rejection under 35 U.S.C. 103(a)* of the other invention.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 2, 7, and 12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

A broad range or limitation together with a narrow range or limitation that falls within the broad range or limitation (in the same claim) is considered indefinite, since the resulting claim does not clearly set forth the metes and bounds of the patent protection desired. See MPEP § 2173.05(c). Note the explanation given by the Board of Patent Appeals and Interferences in *Ex*

Art Unit: 1774

parte Wu, 10 USPQ2d 2031, 2033 (Bd. Pat. App. & Inter. 1989), as to where broad language is followed by "such as" and then narrow language. The Board stated that this can render a claim indefinite by raising a question or doubt as to whether the feature introduced by such language is (a) merely exemplary of the remainder of the claim, and therefore not required, or (b) a required feature of the claims. Note also, for example, the decisions of *Ex parte Steigewald*, 131 USPQ 74 (Bd. App. 1961); *Ex parte Hall*, 83 USPQ 38 (Bd. App. 1948); and *Ex parte Hasche*, 86 USPQ 481 (Bd. App. 1949). In the present instance, claims 2, 7, and 12 recite the broad recitation of general compounds having a particular group and the claims also recites specific compounds such as 1, 4-dinitroaniline, 5-nitroanthranilonitrile, 2,4-dinitrodiphenylamine, 1,5-dinitronaphthalene, 3,5-dinitrobenzonitrile, poly(3,4-ethylene-dioxythiophene), tetraphenylethylene, azulene, 1,2,3,4-tetraphenyl-1,3-cyclopentadiene, and bis(ethylenedithio)tetrathiafulvalene which are the narrower statements of the limitation. It appears some of these specific compounds are within the earlier recited compound groups of the claims. Clarification and/or correction are required.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

5. Claims 11 and 12 are rejected under 35 U.S.C. 102(b) as being anticipated by Fujita et al. (EP 1017118 A2). Fujita et al. exemplifies a device (Example 16, Table 3) comprising perylene (an aromatic compound with hydrogen) as a donor in an electron transporting layer (see page 22, abstract, and par. 75).

Claim Rejections - 35 USC § 103

Art Unit: 1774

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (EP 1017118 A2). Fujita et al. teaches organic electroluminescent elements comprising a light emitting layer between an anode and a cathode. Between the anode and the light emitting layer is a hole transporting layer containing a hole transporting material and an acceptor. Between the light emitting layer and the cathode is an electron transporting layer containing an electron transporting material and a donor. (See Abstract). Materials for the acceptor include compounds having a nitro group such as TNF (trinitrofluorenone) and DNF (dinitrofluorenone) (see par. 48) per the elected acceptor species comprising an aromatic compound with a nitro group. The amount of acceptor to hole transporting material is 1 to 20% by weight (see par. 49) per claim 3. Fujita et al. teaches the thickness of the hole transporting layer is 100 nm (see Examples) per claim 5. With regard to the electron donor material, Fujita et al. teaches condensed polycyclic compounds such as pyrene, perylene, anthracene, tetracene, and pentacene (see par. 75) per the elected donor species comprising an aromatic compound with hydrogen. The amount of donor material to electron transporting material is 1-20% by weight (see par. 76) per claims 8 and 13. The electron transporting layer is made by a method such as spin coating method per claims 9 and 15 (see par. 77). Fujita et al. teaches an electron transport layer of 30nm thickness (see Examples) per claims 10 and 16. Although Fujita et al. fails to exemplify devices with all of the taught acceptor materials comprising an aromatic compound with a nitro group and donor

Art Unit: 1774


materials comprising aromatic compounds with hydrogen, it would have been obvious to one of ordinary skill in the art at the time of the invention to have formed a device as recited in the claims and to have selected the electron acceptor and electron donor materials under consideration, because Fujita et al. teaches all of the required components of the devices of the claims.

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Dawn Garrett whose telephone number is (571) 272-1523. The examiner can normally be reached Monday through Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rena Dye can be reached at (571) 272-3186. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Dawn Garrett
Primary Examiner
Art Unit 1774

D.G.
April 18, 2006